

Restoring our native dogwood

by James W. Voigt

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IN MAY 2002, 18 SPECIAL FLOWERING DOGWOOD trees (*Cornus florida* L.) blossomed for the first time at Catoctin Mountain Park, Maryland. What makes these trees special is their resistance to dogwood anthracnose, a lethal disease that for the last 20 years has ravaged the species at Catoctin and throughout much of the East.

Park Rangers Keith Langdon and Paul Strider first noticed diseased dogwoods at Catoctin in 1983, just four to five years after the earliest reports of a similar disease in New York and Connecticut. The disease is caused by a new species of the fungus *Discula* (*D. destructiva* Redlin) that was first described through research funded by the National Park Service. Like many other devastating plant diseases, this causal agent is believed to be an exotic. The disease quickly progressed at Catoctin and by 1994 an NPS survey indicated that 77% of the native dogwoods had died, a significant loss. As one of the most abundant native understory species at Catoctin, flowering dogwood was of great aesthetic value and an important food source for wildlife.

In 1991 the National Park Service and the University of Tennessee began a research project to search for anthracnose resistance. Dr. Mark Windham of the Tennessee Agricultural Experiment Station collected seeds and bud wood from nine surviving trees at Catoctin. Dr. Windham propagated these trees and tested them for resistance under laboratory and field conditions. He found a high level of resistance in cuttings and seed from one particular tree, referred to as the “Presidential Tree” because of its location near Camp David. Progeny from this tree are now known as “Appalachian Spring.” Several other trees were also found to be disease resistant and are being further evaluated for future planting at Catoctin.

The 18 specimens of Appalachian Spring planted at Catoctin in 2001 and 2002 are actually clones developed from the Presidential Tree by Dr. Windham. The Catoctin planting will test resistance in a natural setting. The trees were planted at four sites to evaluate differences in elevation, exposure, and canopy cover—factors that affect anthracnose development. The 3-foot-tall trees flowered beautifully in spring 2002 and appeared to be healthy throughout their first year. The park resource management staff and Dr. Windham will continue to monitor the health of these trees.

It is important to understand that Appalachian Spring and other putative disease-resistant flowering dogwoods are clones developed from selected individuals. The lack of genetic diversity in clonally propagated material is a disadvantage and a concern for the long-term restoration of a species in natural settings. One approach to overcome the lack of diversity will be to plant multiple resistant clones from other Catoctin trees in close proximity to the Appalachian Spring specimens to encourage cross-fertilization among themselves and remaining survivors in the area. The park is hopeful that this will expand disease resistance and diversity throughout the population.

The Catoctin dogwood project is an example of applying science to aid nature in dealing with a significant natural resource problem. Deliberately manipulating the genetic composition of a native species in a natural setting is controversial and should be thoroughly discussed and explored. (NPS Management Policies §4.4.1.2 deals with genetic resource management principles.) This approach, however, has potential for and relevance not only to the restoration of flowering dogwood but also to other disease-impacted species, such as the American chestnut. ■

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The developer of the disease-resistant dogwood, Dr. Mark Windham, plants a specimen at the Catoctin Mountain Park Visitor Center with help from Superintendent Mel Poole. Future planting of clones developed from other disease-resistant park dogwoods may foster genetic diversity among the identical specimens.